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VALUE VERSUS GROWTH ON THE FINNISH STOCK MARKET

Master's Thesis

Finance department

June 2021

UNIVERSITY OF OULU
Oulu Business School

ABSTRACT OF THE MASTER'S THESIS

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Title			
Value versus growth on the Finnish stock market			
Subject	Type of the degree	Time of publication	Number of pages
Finance	Master of Science	June 2021	75

Abstract

The author carries out the study in order to investigate the performance of value stocks versus growth stocks on the Helsinki stock exchange throughout the years 2015 and 2019. It is important to find out whether the superior returns exist when the whole investment capital is put into the value portfolio or the growth portfolio and during different circumstances such as boom and bust periods as well as different economic cycles.

The stocks are classified into two portfolios consisting of purely value stocks and growth stocks based on fundamental financial ratios including price-to-earnings ratio (P/E), price-to-cash-flow ratio (P/CF), market-to-book value (MTBV) and price-earnings-growth ratio (PEG). If the stocks score low on these ratios, the stocks are considered to be value stocks. On the contrast, if the stocks score high on these ratios, they are considered to be growth stocks. The holding periods for these portfolios are 6 months, 12 months (1 year), 36 months (3 years) and 60 months (5 years).

Average annual returns (also known as non-risk-adjusted returns or absolute returns) and risk-adjusted returns belonging to the portfolios are compared. In general, the growth portfolios yield higher returns than the value portfolios in most cases, during almost all investment horizons and for almost all variables, except for PEG, which always experiences the opposite. The similar scenario occurs when it comes to boom and bust periods as well as different economic cycles. More significantly, the Betas are always lower for the portfolios that experience higher returns.

The findings of this research does not completely confirm the results of the previous studies conducted on the same topic. While the old studies are in favour of the contrarian investment strategy in value stocks, these empirical results suggest to go for the confronting investment strategy in growth stocks.

The phenomenon of having high returns without high risk does not necessarily deny the well-rooted financial theories such as Efficient Market Hypothesis (EMH) or the Capital Asset Pricing Model (CAPM) due to the fact that not all risk are reflected in the Beta. Moreover, behavioural finance, especially investors' irrationality, can be used to potentially explain the existence of the superior returns.

The conclusion drawn is that depending on different variables and different investment horizons, investors should use different strategy of investing in value stocks or growth stocks in order to gain the highest possible returns.

Keywords

Value investing

Additional information

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1 INTRODUCTION

It is well knowledge that every investor will seek for the opportunities to discover the underpriced stocks, buy them and later sell them when the price of the stocks gets higher, which is the essential motto of stock investments for a long period of time. Underpriced stocks or value stocks, are stocks of the companies that have the history record of performance going under the expectation of the market; thus, have been underpriced with cheaper price. They are contradict to overpriced stocks or growth stocks, which are popular stocks of reputational companies with stable and good history performance record. Needless to say, in order to find these underpriced stocks, the investor is sure to conduct some simple and quick analyses by dint of looking into the stocks' fundamental economic data. These data are likely to be the ones that show the relationship between the price of the stock and its earnings, the price of the stock and its dividend payment, the price of the stock and its annual cash flow, and so forth. However, it is also well-noted that the superior returns gained from the underpriced stocks should not be the case under famous financial theories such as the Capital Asset Pricing Model and the Efficient Market Hypothesis. Concretely, these well-rooted theories state that there cannot exist excess return adjusted for risk and certainly these simple analyses cannot give indications of the extra returns. The paper will comprehensively look into this phenomenon and investigate whether or not such events can exist on the Helsinki stock market. Indeed, the theories under Behavioural Finance are great explanations of the occurrence.

There are thousands of materials produced in the field of stock investments facilitating investors' investment strategies to outperform the market. Nevertheless, in this piece of paper, a model or a framework so as to find the value stocks and the growth stocks is put in priority. No sooner had appropriate stocks been located than the investors could make a profit out of the investment opportunity set through buying the value stocks and short selling the growth ones. Moreover, strategies that involve fundamental analyses approach which have happened to be so popular during these recent years will be focused in this report.

The research will be conducted by forming different portfolios following one strategy of investing in value stocks and the other strategy of investing in growth stocks on the

Helsinki stock exchange and compare the results of these two opposing strategies. Obviously, an investment in value stocks is well known for being called a contrarian investment strategy as it consists of finding and investing in stocks that have been missed out by the market; therefore, has a too low price compared to its intrinsic value. In contrast, an investment in growth stocks is basically what the market and the other investors in general are doing, that is to say, investing in popular stocks of reputational companies, which is a conforming strategy to value stocks investment.

There have been many studies regarding the topic of value versus growth stocks; however, most of those are dedicated to the United States market while a few are written for the Finnish market. The most promising reason for this could be that the Finnish market is very small when it is compared to the Nordics market in particular and the world market in general. Hence, there are less incentives to conduct a research because there are less chances to find sufficient data and stocks for a qualified study. On the other hand, carrying out a research with the bigger exchanges derives more stock choices and higher qualities. More importantly, one may suggest applying the results gained in the United States to Finland; however, the regional differences have drawn great consideration and thus, a local study would be justified.

Some previous studies regarding value and growth stocks on the international scale have been done by the famous Fama and French, 1996, as well as Lakonishok, Shleifer and Vishny, 1994. The studies have proved to have value premium exist on the United States market. In the later study, Fama and French, 1998, has also suggested to have value premium exist outside the United States market. There have been value premium in 12 out of 13 researched markets, during the period between 1975 and 1995. More significantly, Fama and French, 1998 has not covered Finland in their research.

As demonstrated earlier, a few studies have been conducted in the Finnish market; in addition, they have shown to have value premium occur on the Finnish market. Tomi Olin, 2011 has found that value investing in the Finnish market is worthwhile and the volatility is lower for the portfolio consisting of value stocks than it is for the benchmark portfolio consisting of market index during the period between 2000 and 2009. However, Tomi Olin, 2011 has only looked at the performance of the Finnish stock market with market-to-book variable. The purpose of this study is to build on the

previous international and local studies, keep their basic framework yet add more variables that are lacking in order to create a new, more focused and more complete study regarding the value and growth stocks on the Finnish market. Moreover, this study will also investigate the performance of the Finnish stock market during different investment horizons as well as during different economic cycles.

1.1 Research problem

There used to be similar studies comparing the expected return of the value stocks and the growth stocks over a long time horizon; however, the author of the paper holds a belief that the findings of those studies may not be impeccable when applying into the Finnish stock market, thus has raised the topic of similarity. According to Lehkonen (2014), the culprit of the possible misspecifications of the results of the other studies in the other parts of the world when applying in Finland may come from many differences in geographical, sociological, cultural, political and time span characteristics.

The main objective of the study is to explore whether or not a value premium exists on the Helsinki stock market. The study is executed by categorising 25 listed stocks on the Helsinki stock exchange into value stocks and growth stocks by dint of fundamental analysis, followed by forming portfolios with six value stocks and portfolios with six growth stocks. The next step is to compare the expected returns over time between the portfolios when it comes to different variables, different investment horizons and different economic cycles.

1.2 Research question

Main research question:

- Can a contrarian investment strategy in value stocks provide a higher excess return adjusted for risk compared to a conforming investment strategy in growth stocks on the Finnish stock market?

- If yes, is the volatility of value portfolios lower than the volatility of growth portfolios?

Sub-questions are also raised to support the main research questions:

- What does well-rooted financial theories say about the value investing strategies?
- If empirical results suggest there have been abnormal returns, does it mean the market is inefficient? What are the possible causes and phenomena to explain the market abnormality?
- Which variables among these four variables, Price-to-Earnings, Price-to-Cash-flow, Market-to-Book and Price-Earnings-Growth, should be used as the indicator for possible higher excess return adjusted for risk?
- Which investment horizon is preferable? How long does it take for the market to revert back to its long-term mean?

2 LITERATURE REVIEW

According to numerous available studies from outstanding professors and researchers, such as Capaul et al (1993), Harris et al (1994), Fama and French (1998), value stocks, on average, remarkably outperform growth stocks. However, the traditional financial theories seem to become limited over time; and thus, is unable to clearly explain the existence of value premium on exchanges around the world. That is the reason why new theories including behavioural finance has been applied so as to look for potential answers. Indeed, while traditional and idealised financial theories argue for the extinction of value premium based on arguments that the market is efficient, the trade-off between return and risk, new financial theories debate that investors are more irrational who have social, cognitive, and emotional biases, causing real and imperfect decisions; and therefore, drive the existence of value premium on exchanges.

The aim of this section is to introduce different theories that are likely to propose and oppose the possibility of the value premium on the Finnish stock exchange.

2.1 Efficient Market Hypothesis

Efficient Market Hypothesis (EMH) is a well-known theory in the financial field stating that a value premium cannot exist. Clearly, Fama (1970) gives the efficient market a definition as the market in which stock prices fully and accurately reflect all publicly available information. That is to say, the information available in the market publicly today is certain to indicate the future price change in the stock, which will influence the price of the stock already today. Obviously, investors will take actions immediately and push the price of the stock to the level that it reflects the new information. The news can be either good or bad, thus the stock price will adjust accordingly up or down. With no doubt, all publicly available information today is incorporated into the stock price right away.

The EMH has three forms based on different sets of information that we use, including weak form efficiency, semi-strong form of efficiency and strong form of efficiency (Brealey et al, 2008).

To be concrete, the market is in the weak form of efficiency when all available information happens to appear in the stock price are based on the historical data of the stock's past prices, stock's past trading volume, stock's charts.

The market is in its semi-strong form of efficiency when all available information reflected in the stock's price are contained in the historical data and all publicly available information such as the company's current contracts, business, the quality of the board of management.

The strong form of market efficiency reflects all available information stored in all historical data, all publicly available and private information such as all information appearing under the management's confidential plan.

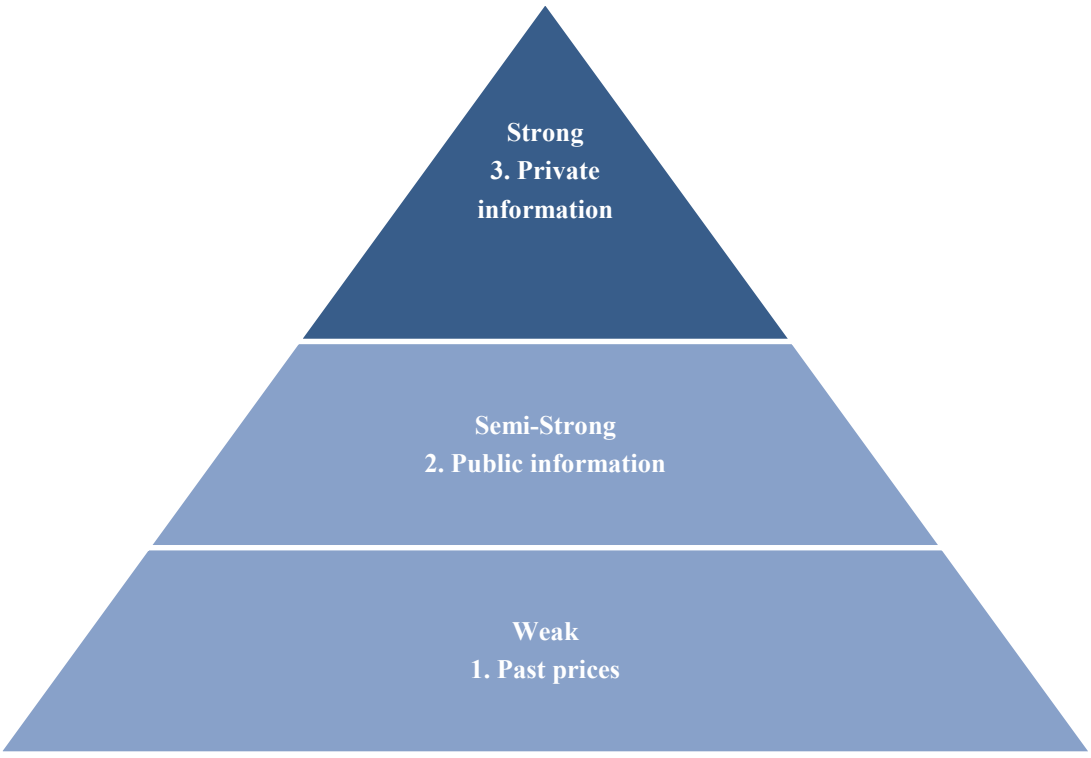

Figure 1: Efficiency under Efficient Market Hypothesis (Fama, 1970)

The EMH also has three assumptions and these assumptions concern the rationality and irrationality of investors with the efficiency of the market.

First and foremost, in the market, most investors are rational; thus, the stocks' prices are at their fundamental values, in the equilibrium levels.

Secondly, there are also some irrational investors; however, in the long-term, the actions of these irrational investors will be randomly cancelled out.

Last but not least, when there are irrational investors and they have the tendency to follow herd mentality, mispricing is likely to happen leading to some arbitrage opportunities. By taking advantage of these opportunities, rational investors would then take actions and drive the price of stocks back to their equilibrium levels again. Without doubt, even though having the irrational behaviours, the market can still be in its efficient state (Shleifer, 2000).

2.2 Theories explaining the presence of excess returns adjusted for risk for value stocks under EMH

In order to understand the existence of value premium, one should trace back its drivers, which is found in the study of Fama and French (2007).

It is well-knowledge that the average annual returns of value stocks and also of growth stocks can be decomposed into two main components, dividends and capital gains. These capital gains can be obtained by three sources: growth in book value; increase in stock price; and inflation probably causing an upward drift in price-to-book ratio.

Economically speaking, when researchers divide companies into two portfolios of value companies and growth companies, value stocks are sure to perform at the bottom part of the profitability and expected returns; thus, these low-performing companies are likely to have a chance to improve their performance after a turnaround of the company, resulting in a value premium. On the other hand, growth stocks are certain to perform at the top of the profitability and expected returns; hence, these high-performing companies will surely have profitability be driven down by fierce competitions. Indeed, standard economic forces can also explain the presence of value premium, Fama and French (2007). Another research has shown the same result is conducted by DeBondt and Thaler (1985). They have classified stocks as winners and

losers based on their past performance and divided them into two portfolios containing of only winners and only losers. The above effect is proven to be true with loser stocks outperforming winner stocks by about 25%.

2.3 Capital Asset Pricing Model and its limitations

Capital Asset Pricing Model (CAPM) is the well-rooted theory when it comes to predicting stock's expected returns. Needless to say, CAPM states that value premium cannot exist. The investor gains a level of return for the appropriate level of risk taken. If the investor gets higher return, it is because the stock has higher risk. However, through empirical studies, it is showed to be not the case.

According to the CAPM, the value stocks' premium compared to the growth stocks' premium would be explained by the risk characteristics of the value stocks over the risk characteristics of the growth stocks. It is well knowledge that CAPM is a widespread model used to explain the expected return of the stock through the risk-free rate of return, the expected return of the market and the unsystematic risk Beta. The level of premium is explained by the Beta coefficient which measures the risk characteristics of the stock.

$$Expected\ return = Risk\ free\ rate + Beta \times (Market\ expected\ return - Risk\ free\ return)$$

Equation 1: CAPM

Nevertheless, there appear many empirical researches that prove deviations from the CAPM results. This is one shortcomings of the CAPM regarding predicting stock's expected returns. Among the most prominent empirical studies in the field, Fama and French (1992) have highlighted to be the most noteworthy one. They come to the conclusion that the Beta seems to be a weak measurement when predicting the stock's expected returns and the CAPM seems to be a not good model when explaining the stock's expected returns, particularly with regards to the stocks' certain characteristics such as stocks with market capitalisation or stocks with its intrinsic value. Fama and

French (1992) have proved that market capitalisation and market-to-book ratio variable are better risk factors at explaining the risk than the CAPM's the market factor thanks to the strong relation between these two risk factors and the stock's expected returns.

The empirical research's results come out that small stocks have higher expected returns than big stocks and low market-to-book ratio stocks have higher expected returns than high market-to-book ratio stocks. When controlling for the risk factors, the Beta has no significant explanation to the stock's expected returns. Those differences in returns must represent some risk in investing. Small stocks earn a return premium over big stocks. Low value stocks earn a return premium over high value stocks. Those small stocks and low value stocks must be riskier, thus be represented as risk factors. According to the results of Fama and French (1992), a model accounting for the size effect and the market-to-book effect performs much better than the CAPM.

A different version of CAPM is known as multi-factor model, for instance Fama and French 3 factor model (Brealey et al, 2008). The model also describes stock's expected returns using three risk factors including market factor (the outperformance of the portfolio's expected return versus the risk-free rate of return), size factor (the outperformance of small companies' stock versus big companies' stock) and market-to-book factor (the outperformance of high market-to-book value stocks versus low market-to-book value stocks). Owing to the fact that the Beta is not the perfect risk measurement, Fama and French (1992) have said that the high excess return adjusted for risk of value stocks is certainly derived by the added risk not captured by the Beta. The added risk is surely the risk of holding value stocks in comparison to the risk of holding growth stocks.

With a number of shortcomings, the usage of the CAPM has the likelihood to cause some serious problems because the model has failed to capture all essential risk related to the investment. The continuous implementation of the CAPM is certain to result in unpredicted risk, uncertainty outcomes and unsuccessful investment, followed by inconsistencies in risk and return patterns. That is the reason why more and more

researchers have been looking for newer and more precise theories, models and methods to analyse the relationship between risk and return.

According to Harris and Marston (1994), the Beta and the market-to-book ratio are the two variables appearing to have significant and positive relationship. This can be explained by the fact that higher risk (high Beta) is rewarded by higher expected returns (high market-to-book value) for the investors. That is to say, the Beta can still be useful when pricing the stock. In addition, higher expected returns can also predict some kind of higher risk of the stock. With no doubt, the Beta is surely a variable to price the stock and is definitely a measurement of risk that should not be disregarded. No sooner had Harris and Marston (1994) demonstrated that value stocks produced higher return but they were also riskier than growth stocks than Bernstein (2002) proved to get the same result. By and large, the finding is in line with the concept of the value premium being derived from higher risk.

An interesting point is that since investors have the tendency to forecast future growth based on previous growth pattern and they like to use extrapolation of the current trend, growth stocks are projected to outperform value stocks during periods of positive returns or boom periods. Conversely, value stocks are inclined to outperform growth stocks during period of negative returns or bust periods (Chan et al, 2004). The clear proof of this phenomenon is the dot-com bubble starting in the United States and basically spreading to all countries around the world during the year 2000. This can be explained by Bernstein (2002), stating that when prices starts to decline, growth stocks have a rapid fall in prices than value stocks. Moreover, the new negative information relating to growth stocks is likely to create a more aggressive downward reaction as opposed to the new information relating to value stocks (Lee et al, 2009). As a consequence, during the bust periods, growth stocks are likely to observe a higher volatility compared to value stocks (Bernstein, 2002). With all the arguments provided, one may claim that the value premium may only be present during the bust periods as value stocks find their way round. However, the value premium do actually exist in both the boom periods and the bust periods as has been empirically proven by Chan et al (2004). That is to say, value stocks outperform growth stocks in both the boom periods and the bust periods. Once again, the inability of the CAPM has shown as the finding is inconsistent with the CAPM yet the model fails to explain this anomaly.

According to the CAPM, higher risk is associated with higher returns and the possible excess returns adjusted for risk of value stocks; thus, stocks with higher risk would then outperform in the boom periods but would also underperform in the bust periods, which in fact, was not the case under Chan et al (2004) study. All in all, it is possible to conclude that the CAPM is not a reasonable model when aiming to explain the existing value premium gained from value investing strategies.

2.4 Mean reversion

Mean reversion is the concept that is likely to provide a meaningful explanation to the persistence of value premium in the stock investment.

Mean reversion is a financial theory stating that certain variables of interest such as stocks' returns and volatilities eventually revert to their long-term average levels.

Researchers have been arguing over the existence of mean reversion in the stock market. There are mixed results from the studies conducted in the United States' stock market during long-term periods. According to Campbell, Lo, and MacKinlay (1997), there is little evidence for mean reversion in the United States during the long-run, this could possibly due to small sample sizes the study uses; however, the conclusive evidence goes for mean reversion is still controversial.

In order to prove the presence of mean reversion, which occurs slowly, in a data set, enough data for a long time series are needed, which can be challenging (Balvers et al, 2000).

Regarding studies for Nordics countries, Frennberg and Hansson (1992) indicate that there is mean reversion on the Swedish stock market between the years 1919 and 1990. The market does not follow a random walk. Risager (2008) conclude that there is demonstration of mean reversion on the Danish stock market. Sarkar (2008) shows that there is mean reversion for large shocks, and mean reversion in the conditional mean for small shocks on the Finnish stock market.

2.5 Market behaviour – irrational investors

Another potential explanation for the persistence of value premium on the stock exchange is the irrational behaviour of investors on the stock market.

It is argued by Lakonishok et al (1994) and Haugen (1995) that value premium exists as the market and irrational investors price value stocks lower than their intrinsic value and price growth stocks higher than their intrinsic value. That is to say, the value premium found under value investing strategies can be resulted from the fact of having growth stocks being overvalued. More importantly, this overvaluation of growth stocks is sure to be intensified by irrational investors and thus, magnifying the price of growth stocks even further in the future. This phenomenon in statistics is called extrapolation. It is based on the assumption that attempts to predict future data by relying on historical data, such as estimating the price of a stock a few years in the future on the basis of the current stock price and its rate of growth. Since the value stocks experience a weak trend, they become undervalued and growth stocks witness a strong trend, they turn out overvalued. However, this is not always the case in reality.

Through time, by using fundamental analysis, and comparing stocks among each other in the market, investors will certainly find out the true value of stocks and push the growth stocks to revert towards their fundamental values as well as drive the value stocks to convert towards their true values.

Owing to published academic studies, rational investors are likely to be aware of this extrapolation process in the market, and thus, minimising the existence of value premium. However, a certain number of irrational behaviours of the investors still result in a significant value premium (Capaul et al, 1993).

More significantly, Lakonishok et al (1994) states that value investment provides greater returns without any additional risk compared to growth stocks, which absolutely goes against the well-known financial theory that proves the return to be dependent on the risk. Bernstein (2002) says that an investor cannot get one without the other.

From the above argument, one may doubt the investment in growth stocks; however, as widely known, the major fraction of the investors are kept doing this. In order to explain a part of this growth stock investment strategy, behavioural patterns by the investors and agency issues are sure to do well (Chan et al, 2004). To be concrete, most of the time, investors are dependent on their customers and bosses to derive the required results. Thus, for the sake of short-term incentives and increased trading commissions, they tend to investing in growth stocks due to the fact that these investments generally bring good short-term profits that satisfy whomever they are responsible to, and moreover, these investments usually make it much easier for investors to selling or recommending a stock that can show a good performance record than a stock that has a bad performance record. It cannot be denied that this type of investment is specifically popular among institutional investors (Chan et al, 2004).

The most interesting part is that Price-to-Earnings ratio (P/E), or Market-to-Book value (MTBV) or any other variables that are capable of separating value stocks and growth stocks from each other can be a good indicator when predicting future stock return. No sooner had optimistic investors been happy with positive returns than the actual growth of a particular stock took the opposite direction and left those investors with negative returns. Without doubt, investors are overconfident and too optimistic regarding future growth of stocks having good historical performance and overconservative and too pessimistic regarding future growth of stocks having bad historical performance.

In conclusion, the existence of value premium in the market can be partly explained by irrational behaviours of investors belonging to both professional and amateur investors. In addition, P/E variable, MTBV variable which are familiar with distinguishing growth stocks from value stocks are certain to work well when it comes to forecasting future returns (Chan et al, 2004).

2.6 Behavioural characteristics of investors

The disposition effect

The disposition effect belonging to behavioural characteristics of investors can possibly explain the existence of value premium in the stock market. The effect was

framed by Shefrin and Statman in 1985. According to the two prominent researchers, investors are reluctant to sell stocks that have lost value while they are more likely to sell stocks that have made gains (Shefrin and Statman, 1985). The effect is illustrated in figure 2 as below:

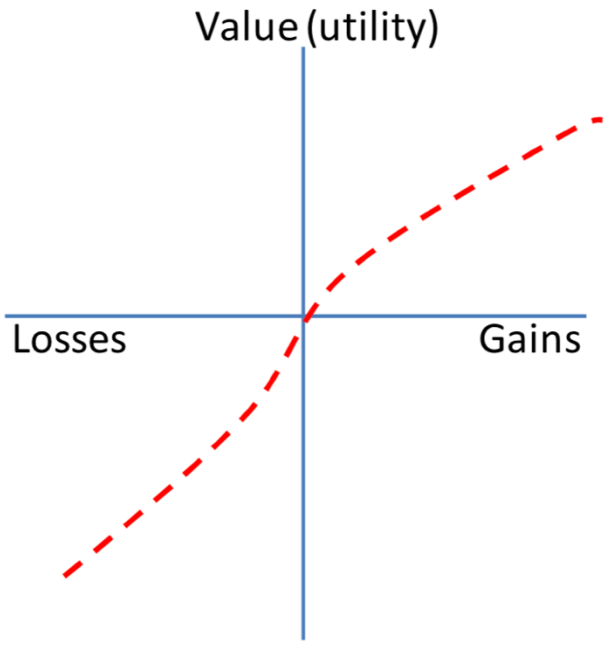

Figure 2: Illustration of the disposition effect (Shefrin and Statman, 1985)

From the figure above, it can be clearly seen that the utility marginally declines when the higher the gains or the lower the losses are. Financially speaking, the investors are sure to acquire more utility when getting rid of the stocks more early, and reinvest the gains in another stock.

According to Odean (1998a), a few suggestions are raised to explain the disposition effect of Shefrin and Statman (1985):

- Each investor has his or her own reference level of stock price, from which level they are willing to increase their gains. In addition, this level is sure to change from time to time as a result of changes in stock price as well as historical performance of the stock. More interestingly, when the expected gains are not recognised, the investors will have the tendency to hold on the

stock for much longer than they should do, hoping the price to go above the reference level and reach out the expected gains. Therefore, the growing price of value stocks are expedited and the prices moving forward the long-term trend. On the contrary, when the price of the stock goes above the reference level, the investors will tend to sell off the stock too soon even though there is a continued momentum effect. As a result, the growing price of growth stocks is disrupted and the prices revert back towards its long-term trend.

- At the end of the fiscal year, when there comes the period for realising tax benefits and losses, a growth in realised losses is likely to be observed.
- Portfolio rebalancing can also be a reason for the selling and buying inefficiently.
- Increased transaction costs is another point for investors to feel reluctant to sell stocks with negative returns.

Overconfident investors and market dynamics

According to Odean (1998b), to some extent, investors often make investment decision that deviates from the market equilibrium. That is to say, in most cases, investors are overconfident and sometimes, investors are underconfident when it is related to stock investment.

The overconfidence of an individual investor and all investors worldwide certainly have a great influence on their investment decisions, which creates inefficient reactions and fluctuations in the market and affects the global financial market as a whole. The reactions to new information on the market, followed by the inefficient fluctuations are substantially caused by each investor's individual utility function and the way the investor values the new information. Moreover, it is crucial to possess a deep understanding of the other investors' overconfidence characteristics because they play an important part in the market and contribute to form the market dynamics. Investment funds and the other investors need to understand this underlying dynamics in order to minimise the inefficient fluctuations, and lead the way to get more market returns by making use of superior investment strategies. Hence, it cannot be denied

that the investment decisions of individual investors and managers are of great importance (Odean, 1998b).

Hirshleifer et al (1998) have also researched the investor's overconfidence and provided some examples of evidence suggesting the phenomenon. This kind of behaviour is obvious in many industries, not only in finance, as well as is clear in different types of decision making processes. From the study, it seems that investors tend to overreact when it comes to private information and underreact with regard to public information. Moreover, numerous investors tend to be overconfident about their own knowledge and skills to make good decisions. Simultaneously, they underestimate the other investors' abilities in the same profession when thinking they are smarter than any other investors. This overconfidence has caused the investors to only trust their own forecasts instead of analysing a variability of other available and reliable forecasts. Eventually, when the time comes and the true price of the stock becomes apparent which goes contradict to the expected projections, the overconfident investors criticise a bad outcome on the external factors that the investors cannot influence while they take credits for a good outcome. Taking this under consideration, there is strong evidence towards irrational behaviour of the investors, which is overconfidence. This irrational behaviour causes the stock's price to deviate more from their fundamental values and thus, pushing the market as a whole out of its equilibrium. Only by some time later, does the available public information make the stocks' prices revert back to their true values. Indeed, there appears some momentum of stock prices in the short-term while prices go back to their fundamental value in the long-term (Hirshleifer et al, 1998). Obviously, this supports the theory of mean reversion.

According to other researchers, Griffin and Tversky (1992), the overconfidence of professional institutional investors are even more serious than individual and private investors. Needless to say, this surely suggests that professional institutional investors are prone to worse returns and more losses than their counterparts.

Last but not least, Hirshleifer et al (1998) end the study stating that the prevalence of the efficient investment may be more popular in large-capitalised stocks than in small-capitalised stocks. The reason behind this finding is because small-capitalised stocks have higher costs for gathering the information, which produces weaker and lower

frequency of public information associated with small-capitalised stocks, and thus, is certain to cause long lasting effect of pricing inefficiencies, and investors' overconfidence may be more evident when exposing to small-capitalised stocks. Without doubt, the creation of lower information costs surely lead to higher efficiencies in the market. The realised higher risks for small-capitalised stocks is likely to be caused by this effect.

Investor overconfidence and the disposition effect together

While some people think that investor overconfidence and the disposition effect come hands in hands, Statman et al (2006) disagree with the statement. The group of researches clearly distinguish the investor irrational behaviour which is overconfidence and the disposition effect. They say that investor overconfidence is likely one kind of behavioural attribute which affects the investors, on the contrary, the disposition effect is more about a sort of attitude towards specific stocks. Indeed, the two concepts has low likelihood of being incorporated into each other and thus, a distinction is made.

To be concrete, the disposition effect emphasises the fact of having investors seeking to realise positive returns when the stock price increases whereas avoiding to realise negative returns when the stock price declines. Moreover, the disposition effect also argues that investors tend to sell their good performing stocks too soon as a result of negating the growth in the price momentum too soon.

Investor overconfidence, on the other hand, puts more focus on the momentum in stock price. The investors believe in stock price increases due to the initial growths earlier. A more interesting part is that both investor overconfidence and the disposition effect concur with the idea that during the bust periods, the investors are prone to hold on to badly performing stocks too long because they look forward to the stock price to increase again. That is to say, the disposition effect is certain to suggest the scenario of having the efficiency to go down when stock prices go down as the investors will be holding on to the stock.

Lastly, Statman et al (2006) find out that stock return increases after the period of increased market returns, which is definitely owing to the combination effect of both investor overconfidence and the disposition effect in the market. The researchers add that the result is more noticeable for small-capitalised stocks than large-capitalised stocks, which is certainly due to the fact of small-capitalised stocks having lower liquidity and the higher volatility compared to large-capitalised stocks.

In conclusion, the studies' results confirm additional arguments to the existence of overconfidence and value premium in the market.

2.7 Rebalancing and transaction costs

It is always a great consideration when it comes to optimal holding period or investment horizon, and this section will help to shed light on these matters.

Firstly, it cannot be denied that the total holding or rebalancing costs is directly affected by the total transaction costs. The more often the portfolio of stocks is rebalanced, the higher the transaction costs are. That is the reason why the frequency of these transactions is also affected.

Secondly, according to Barber and Odean (2000), it is more optimal to adopt a buy and hold strategy because the rebalancing strategy has a negative influence on the portfolio performance for both private and professional investors. The evidence has shown that numerous investors with irrational trading frequency experience poorer performance compared to buying and holding the market portfolio. The reason is much attributed to investor overconfidence and the positive correlation between transaction costs and the frequency of these transactions. Even though the high frequency of trades does not seem to impact the performance of the portfolio in a negative way, the transaction costs seem to have influence.

It is well knowledge that due to changes in market capitalisation of the individual stocks from time to time, investors are surely in need to rebalance their portfolio so as to have a diversified portfolio of stocks. Therefore, it is important to keep in mind that

both of these drivers, investor overconfidence and transaction costs have a significant impact on the performance of the portfolio of stocks.

Summary

From all the theories provided above, there are suggestions for the existence of value premium in the stock market.

First and foremost, according to Efficient Market Hypothesis (EMH), the market is totally efficient when the market relies on the very strong assumption, which is hardly the case. Moreover, it is argued that the market cannot be in its efficient form because it requires time and costs for information seeking. Needless to say, if all required information is included in the stock price already, nobody would have the motivation to spend time and money to search for these information anymore. In addition to that, if nobody is looking for the information, prices can rarely contain the information and obviously, the market is never efficient. More interestingly, even if the market was efficient, there would also exist value premium in the stock market as a result of increased competition between growth stocks and value stocks with growth stocks witnessing eroding performance and value stocks experiencing turning-around abilities for their company to increase growth. Without doubt, EMH does not forbid the idea of value premium.

Secondly, it is widely known that the traditional CAPM rejects the existence of value premium. However, the fact is that the traditional CAPM fails to capture the comprehensive risk because it depends solely on the beta coefficient as the proxy for the risk. Moreover, according to Lakonishok et al (1994), as stated above, value stocks does not provide any additional risk compared to growth stocks. Hence, there appears value investing strategy that yields value premium with no further risk. Indeed, the traditional CAPM does not necessarily deny the existence of value premium.

Thirdly, while taking the statistical concept of mean reversion under consideration, value premium appears to be in favour. Low performing stocks are forecasted to revert back to their long-term trend thanks to performance boost, which surely creates value premium. On the other hand, high performing stocks are projected to deteriorate their

performance back to their long-term trend owing to performance fall. By and large, the concept of mean reversion accompanies the idea of value premium and Sarkar (2008), as stated above, suggests that mean reversion is present on the Finnish stock market.

Fourthly, extrapolation and different agency problems considered as irrational behaviour of investors do also explain reasonably the persistence of value premium in the stock market. Extrapolation is about the wrong forecast of the growth stock's future performance which drives the stock prices further away from their fundamental values. Moreover, investors, by dint of short-term incentives and swift turnovers, may be short-sighted and invest heavily in growth stocks. More interestingly, investors, as being dependent on superiors and customers, may also choose to bet on growth stocks in order to satisfy the powerful parties. This bias in growth stocks is sure to increase their prices while decreases the prices of value stocks because value stocks are neglected. As being discussed earlier, over a period of time, prices of both growth stocks and value stocks will revert back to their true values.

Fifthly, the disposition effect together with investor overconfidence draw great consideration for the explanation of value premium. While the disposition effect says that investors like to realise positive gains when the stock price increases and refuse to realise negative losses when the stock price declines, investor overconfidence argues that there is the increased momentum in stock price owing to the initial growths earlier. The disposition effect points out that investors have the tendency to sell their good performing stocks too soon which causes a decrease in the stock's increased momentum. Furthermore, investor overconfidence goes hands in hands with the disposition effect regarding the idea that stock prices are likely to fall because overconfident investors like to hold on to badly performing stocks too long as they expect for the stock price to increase again. Obviously, both of these concepts have a noticeable contribution to the existence of value premium.

Last but not least, the traditional CAPM theory does not necessarily contradict the phenomenon of value premium. More significantly, behavioural finance theories play an important role dealing with the fact of having irrational investors in the stock

market. These all have contributed to potentially explain the presence of value premium on the Finnish stock exchange.

The holding period and the frequency of trades have the likelihood to affect the total return of the investor's portfolio through the transaction costs.

3 INVESTMENT STRATEGIES

It cannot be denied that investors all around the world, regardless of private or professional ones, are bound to search for numerous investment philosophies in order to explore hidden opportunities and beat the market to gain excess returns. Among those philosophies, strategies of investing in value stocks and investing in growth stocks are used in the empirical research of this study. Moreover, this section is sure to provide a good overview of these strategies to the readers.

3.1 Contrarian investment strategies

Some investors are in favour of investing in value stocks, so-called contrarian strategy, to find and invest in stocks that have been missed out by the market, while other investors are more interested in the investment of growth stocks, so-called conforming strategy, to invest in popular stocks of reputational companies. Needless to say, the latter outstands the former in the level of frequency and the degree of investor rationality.

However, there has been arguments that contrarian strategies do not necessarily mean investors do the opposite or investors are irrational. Investors who follow the contrarian strategy buy and sell their stocks when the other investors do the opposite. Obviously, this is done as regard to the price of the stock. If the stock price is high, a contrarian investor will sell the stock, which seems to be eccentric, unconventional and rash in the eyes of the average opinion (Keynes, 1936).

In relation to the confronting strategy, Lakonishok et al (1994) discuss that investors have the tendency to rely too much on historical data or performance and publicly available information about the stocks, which is the reason why conforming investors are then prone to extrapolate the past performance of the stock too far into the future (this was already discussed in chapter 2), which causes stocks' mispricing and market's equilibrium fluctuation. As a result, large errors in the market are made, followed by the birth of value investing strategy to push the market back to its equilibrium level and produce superior returns compared to the conforming strategy without adding any additional risk (Lakonishok et al, 1994).

In order to successfully implement the contrarian strategy, a clear classification of different stocks that the investor is investing in should be put in priority. More interestingly, the investor is ought to understand the underlying factors that determine the classification and sort out stocks into value portfolios and growth portfolios.

Lakonishok et al (1994) applied the stocks' classification so as to test the United States stock market and investigate potential dominant strategy. The result showed that there was a strong indication of superior returns when investing in value portfolios as contrast to growth portfolios. There were ten portfolios consisting of purely growth stocks, the combination of both stocks and purely values stocks. The variables used to classify the stocks were Market-to-Book value, Price-to-Cash-flow, Price-to-Earnings and Growth-in-Sales. Indeed, the more the value stocks are added into the portfolio, the higher the returns.

3.2 Value versus growth

There are variables that can be used to classify stocks into value and growth including Price-to-Earnings (P/E), Price-to-Cash-flow (P/CF), Market-to-Book value (MTBV) and Price-Earnings-Growth (PEG). Table 1 below shows the connections between these variables and the value and growth strategies.

Table 1: The variables

Growth stocks	Value stocks
High P/E	Low P/E
High P/CF	Low P/CF
High MTBV	Low MTBV
High PEG	Low PEG

P/E

P/E ratio is one of the most important variables that helps to evaluate companies and find out whether they are overvalued or undervalued. The ratio is calculated based on the company's share price to the company's earnings per share. Obviously, the low P/E gives an indication that the price of the stock is low compared to its actual earnings, whereas the high P/E gives an indication that the price of the stock is high compared to its actual earnings. Moreover, the low P/E also suggest that the stock is underpriced and cheap while the high P/E also advise that the stock is overpriced and dear. Without doubt, a stock having low P/E ratio should be classified in the value category.

P/CF

P/CF ratio is another significant variable used in company valuation. The ratio is calculated by dividing the company's share price to the company's operating cash flow per share. Similarly to P/E, the low P/CF gives an indication that the price of the stock

is low compared to the available cash flow and the stock is underpriced and cheap. Indeed, a stock with low P/CF ratio should be considered in the value category.

MTBV

MTBV is the short form of market-to-book value. It compares the price of the stock to its book value in the balance sheet. The low MTBV gives an indication that the price of the stock is traded low (close to or even below) than the company's book value and the stock is underpriced. In contrast, the high MTBV gives an indication that the price of the stock is traded higher than the company's book value and the stock is overpriced. That is to say, a company's stock experiencing low MTBV is considered to be a value stock.

PEG

Last but not least, it is PEG ratio. The ratio stands for Price Earnings Growth. It captures the speed of changes in the company's P/E ratio. Clearly, the low PEG ratio gives an indication that the stock is neglected by the market and the stock is underpriced.

More remarkably, in this report, PEG ratio is used in place of Growth in Sales variable as in Lakonishok et al (1994)'s study due to the fact that the growth in P/E seems to be a better performance indicator than the growth in sales because surely, earnings is a better indicator of company performance than sales. By and large, PEG ratio is likely to provide a better explanation of the momentum in the stock.

3.3 Value stocks

Even though value and growth stocks have shown their own advantages, investors are still struggling to decide whether to invest in value or growth stocks (Swensen, 2000). In this sense, value investing strategy appears providing a helping hand to the confused investors. This is the investment in stocks which are underpriced according to fundamental analysis and some variables such as P/E, MTBV. When choosing value stocks, investors buy stocks that are neglected by the market, betting on the better

returns as under efficient market conditions, fundamental values have the tendency to revert to the mean values (Swensen, 2000 and Balvers et al, 2000).

3.4 Value investing

It is well knowledge that value investing and contrarian strategy resemble each other. Investors calculate the stock's fundamental value and compare this value with the stock's price so as to know whether the stock is underpriced or overpriced and form the decision to invest or not.

Numerous researchers have proved this strategy to provide superior returns. Among them, Risager (2008) has made a significant study. He made a test on the Danish market between the years 1950 and 2004 and found out that there was a value premium of about 5% and only a small proportion of the value premium was explained by standard deviation or risk.

3.5 Growth stocks

Contrasting to value stocks which are unpopular and neglected stocks, growth stocks are popular and dear stocks belonging to companies whose earnings are expected to grow at the higher rate than the market rate. More remarkably, it is important to keep in mind that a growth company does not necessarily develop a growth stock.

Swensen (2000) shows in his study that those investors who purely invest in growth stocks do not usually care about fundamental analysis. They are in turn more interested in the stock's future development analysis because they believe that the growth stock's price today is always lower than the growth stock's price tomorrow.

3.6 The Helsinki OMXH25 index

It is well knowledge that OMX Helsinki 25, belonging to OMX Group, is the Helsinki Stock Exchange leading stock index on the Finnish market. The index includes 25 mostly traded stocks on the Helsinki Stock Exchange. Obviously, the fact of limiting the number of companies in the index to 25 guarantees the excellent liquidity of all the

underlying stocks of the index. The composition of the OMXH25 is revised semi-annually, which means the stocks that have lost market capitalisation will be exchanged with the other stocks that have gained market capitalisation. The OMXH25 is the market capitalisation weighted index and the base date is March 4, 1988 (OMXs Group, 2011).

3.7 Market development Worldwide and OMXH25 2015-2019

In figure 3 below, from the period between 2015 and 2019, it can be clearly seen that the market development has been experiencing four different phrases with two periods of declining stock growth and two periods of increasing stock growth, which can definitely be summarised into two major economic cycles.

The first period of slow down stretches from Q1 2015 to Q4 2015, followed by the second period of increase, from Q1 2016 to Q4 2016. In this point, the market is considered to have completed one economic cycle. The third period of slow down stretches from Q1 2017 to Q4 2018, followed by the fourth period of increase, from Q1 2019 to Q4 2019. Again, the third and fourth periods have been referred to as another economic cycle. Moreover, the periods of growth will be regarded as boom periods while the periods of slowdown in growth will be regarded as bust periods.

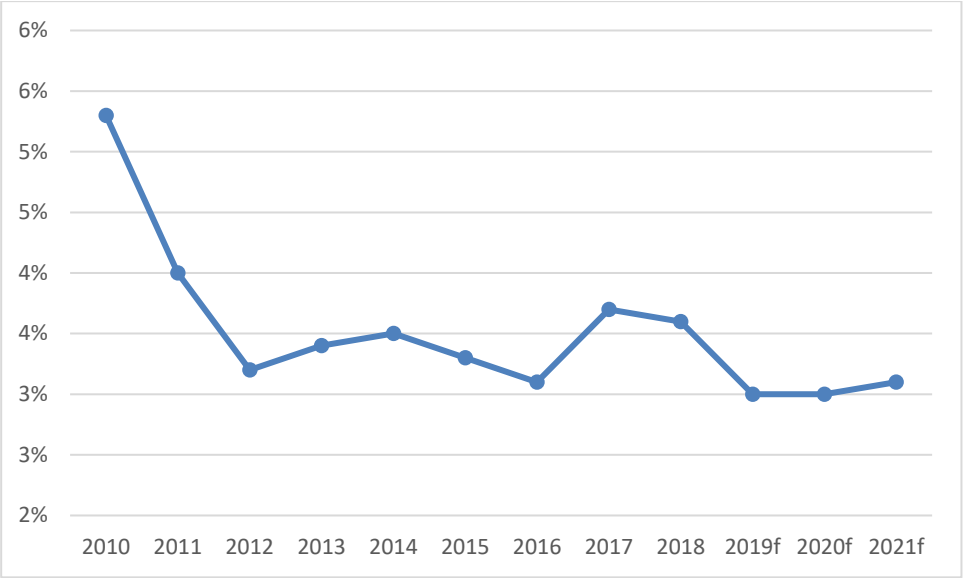

Figure 3: Global Economy based on Estimated worldwide real GDP growth, source OECD

To summarise the boom and bust periods, table 2 is presented as below:

Table 2: Boom and bust periods

	Period 1	**Period 2**
Bust Periods	**Q1 2015 - Q4 2015**	**Q1 2017 - Q4 2018**
Boom Periods	**Q1 2016 - Q4 2016**	**Q1 2019 - Q4 2019**

To summarise two economic cycles correspondingly to the boom and bust periods, table 3 is presented as below:

Table 3: Economic cycles

	Cycle 1	Cycle 2
Economic cycles	**Q1 2015 - Q4 2016**	**Q1 2017 - Q4 2019**

Summary

All in all, value investing strategy is based on fundamental analysis with the presence of the most important variables such as P/E ratio, P/CF ratio, MTBV and PEG ratio. With the use of these variables, stocks can be easily classified into value and growth stocks. If the variable turns out to be low, the stock is regarded to be a value stock. In contrast, if the variable turns out to be high, the stock is considered to be a growth stock instead.

There are two boom and bust periods, and two economic cycles respectively, between the years 2015 and 2019.

4 EMPIRICAL ANALYSIS

In this session, data will be deeply discussed altogether with the methodology used in the study.

4.1 Data

The study uses the historical data in order to investigate value premium between the value stocks and the growth stocks. However, since they are past data, the inclination of generalising and assuming the market to perform in the same way as it did before in the past to the future forecasts seems to be very risky. Owing to the fact that the market may change its characteristics, the use of the study's findings for the future's predictions should be taken with cautiousness. It is well known that the past cannot predict the future and it would be risky for imposing the past's results on the future's.

The paper intended to investigate stocks from the OMXH All Shares Index which includes basically all stocks on the Helsinki OMX exchange. Nevertheless, since the OMXH contains stocks from the middle-capitalisation companies and small-capitalisation companies, low data quality and liquidity causing many missing data points become one of the huge concerns. That is the reason why Helsinki OMXH25 Large-Capitalisation index, which includes 25 most traded and biggest companies on the Helsinki stock exchange, are applied instead to maintain the data quality at the highest level.

More importantly, it is well knowledge that the Finnish market or the performance of the OMXH is actually driven by relatively few stocks in total; however, a large part of these stocks are large-capitalisation stocks generated from the OMXH25, which has created a concentrated market in Finland. Indeed, the advantage of using the OMXH25 over the OMXH so as to draw conclusions from the Finnish stock market as a whole is considerable.

The data used are monthly historical data within the five years span, from 2015 to 2019, full year, thus increasing the possibility to obtain sufficient data for the analysis. The data are pulled from the Thomson Reuters website. This is one of the most popular

and highly regarded databases thanks to its good quality and the amount of data available.

In addition, a few companies seem to have volatile return patterns. A clear example is Outokumpu Oyj, a steel and alloys maker. These companies are prone to lost most of its market capitalisation in a very short time. Obviously, this can impact the result for a specific portfolio. However, since the positive or negative return is likely to make up one six per portfolio, the impact that these companies may bring is considered not very remarkable.

Last but not least, transaction costs and taxes are exempted from the study but they should not have any impact on the upcoming results because both affect the stock's expected returns equally for the portfolios that are formed for the comparison purpose.

4.2 Methods

The report compares contrarian investment strategy in value stocks and confronting investment strategy in growth stocks to see which strategy is likely to yield a greater return on the Finnish stock exchange.

The data are for the Finnish market and is acquired from the Thomson Reuters website. The stocks included in the study are considered with high level of liquidity and good data quality; thus are extracted from the OMXH25 Index. Monthly data for the stock price is chosen as it gives enough data points to analyse. From the statistical point of view, a lower frequency such as yearly data would made it harder to acquire reliable values whereas a higher frequency such as daily data would made it more difficult to handle the data.

The stocks are classified based on fundamental variables including Price-to-Earnings (P/E), Price-to-Cash-flow (P/CF), Market-to-Book value (MTBV) and Price-Earnings-Growth (PEG). Value stocks are those with low ratio value while growth stocks are those with high ratio value. With each fundamental variable being taken into consideration, different portfolios of purely value stocks and growth stocks are formed, followed by the returns' comparison between these two portfolios during different

investment horizons. The same procedure is done when investigating the returns during boom and bust period as well as during expansion and recession economic cycles. For the ratios, the study uses annual data. The Thomson Reuters website provides the average annual ratio in their publications.

The stocks from the OMXH25 Index are ranked according to their ratios. This is done for all months from 2015 to 2019 and for all the ratios. Owing to this practice, by looking at the historical data, investors are likely to find value stocks and growth stocks. Moreover, every portfolio is formed based on the average P/E ratio during the previous month. For instance, if a stock have a low P/E ratio in December 2015, it would be classified in the portfolio consisting of all value stocks beginning in January 2016. More significantly, in December 2015, among the 25 stocks of the OMXH25 Index ranked based on P/E ratio, only six stocks with the lowest P/E ratio would be used to construct the value portfolio, similarly, only six stocks with the highest P/E ratio would be used to construct the growth portfolios in January 2016. The reason for choosing the six-highest-ratio and the six-lowest-ratio stocks for each portfolio is because six stocks out of 25 stocks from the index approaches the 25-percent-lowest-scoring and the 25-percent-highest-scoring stocks. If the study separates the stocks into two big groups to form the 50-percent and 50-percent, some stocks in the middle would have similar ratio values; therefore, the two groups would then contain stocks that are not considered as typical value stocks and growth stocks. If the study divides the stocks into smaller groups, the portfolios would have too few stocks, even though a more extreme ratios and a better representation of value stocks and growth stocks would be presented. Without doubt, the middle way is chosen in this study and the portfolios are formed with six stocks to balance these problems.

Buy and hold strategy for equally weighted portfolios has been used, which means that there is no rebalancing during the research periods of rolling 6-month period, rolling 12-month period (1 year), rolling 36-month period (3 years), and 60-month period (5 years), and the invested capital is shared equally among the stocks of each portfolio. The research time period starts from January 1st, 2015 to December 31st, 2019. The five-year rolling return for 2019 is the average annual return for 2015 through 2019. To illustrate, the author wants to invest in a value portfolio classified under P/E ratio for a time period of 6 months and she wants to test the 6-month return over five long

years from 2015 to 2019. On an Excel sheet, she starts with the monthly price of the stock components under the value portfolio from January 1st, 2015 to June 30th, 2015, followed by the calculation of the value portfolio's average annual return. Continuously, she calculates the value portfolio's another average annual return as if she bought the stocks from February 1st, 2015 to July 31st, 2015. The exercise is kept going on over a span of five years. The average of these average annual returns is the rolling 6-month return, rolled monthly over five years.

By virtue of using buy and hold strategy, and by keeping out changes in taxes and changes in market capitalisation, a more realistic and efficient research is certainly achieved. Simultaneously, this would probably cause the comparisons among portfolios more complicated because the changes in taxes, market capitalisation and other variables have not been considered during the investment horizons. In addition, the variety of different investment horizons is sure to provide a helping hand in drawing conclusions about which investment horizon is more preferable when it comes to seeking the highest possible returns.

The result variables which are looked in the study are the Average Annual Return (in percentage) measuring the arithmetic average annual return, Alpha (in percentage) measuring excess return adjusted for risk and Beta (in decimal) measuring the risk, the volatility over the investment periods.

No sooner had the monthly price data been extracted than the monthly return was calculated with the below formula:

$$Return = \frac{P_T - P_{T-1}}{P_{T-1}}$$

Equation 2: Stock Return

Where:

P_T is the price at the current time period

P_{T-1} is the price at the previous time period

For each fundamental ratio, during each holding period, average annual return of each portfolio (value portfolio and growth portfolio) is then reckoned with the following formula in order to later being averaged out for the rolling average annual return:

$$Average\ Annual\ Return = [(1 + r1) \times (1 + r2) \times (1 + r3) \times \ldots \times (1 + ri)]^{\frac{1}{n}} - 1$$

Equation 3: Average Annual Return

Where:

r is the annual rate of return

n is the number of years in the period

After equally weighted portfolios are formed, the average annual returns of these portfolios will be summarised. However, these average annual returns are not risk adjusted, and one type of portfolio could yield a greater return compared to the other portfolios simply because of having a greater risk or higher beta, which would make it harder to draw any accurate comparison among portfolios and thus conclusion. Regression analysis is done in order to find out Alphas and Betas of the different portfolios. The similar practice used for average annual returns is done for Alphas of the portfolios. Alphas are averaged out so as to find the rolling Alpha of the specific portfolio for the specific holding period of the specific fundamental ratio. In the end, the rolling Alpha of the value portfolio and the rolling Alpha of the growth portfolio are compared.

The risk-free rate was extracted from the Fama and French European 3 Factors model issued by the Fama and French Online Data Library. These risk-free rates are used as a proxy for the Finnish risk-free rate.

The empirical research also analyses how the different portfolios consisting of value stocks and growth stocks performed during boom and bust periods and the average annual return is used for the investigation of the nature of the portfolios. As discussed in section 3 - Market development Worldwide and OMXH25 2015-2019, there are two major boom periods and two major bust periods, and these are summarised again in table 2 below.

Table 2: Boom and bust periods

	Period 1	**Period 2**
Bust Periods	**Q1 2015 - Q4 2015**	**Q1 2017 - Q4 2018**
Boom Periods	**Q1 2016 - Q4 2016**	**Q1 2019 - Q4 2019**

Furthermore, the empirical research is conducted to check whether the different portfolios fluctuated in the results during different economic cycles. Each economic cycle is constructed of a bust period followed by a boom period. Due to the fact that the data used in the report starts from a bust period, the starting period is the bust period in both of these economic cycles. The summary of the two economic cycles is found again in table 3.

Table 3: Economic cycles

	Cycle 1	**Cycle 2**
Economic cycles	**Q1 2015 - Q4 2016**	**Q1 2017 - Q4 2019**

Summary

In this study, the index is used as a basis is the OMXH25 Index. The stocks are classified into value and growth stocks based on the ratios such as P/E ratio, P/CF ratio, MTBV and PEG ratio. With each ratio, the value portfolio is formed by taking the 25-percent lowest ratio stocks and the growth portfolio is formed by taking the 25-percent highest ratio stocks. After the portfolios are formed, the rolling average annual returns are calculated for each holding period of 6, 12, 36 and 60 months. Moreover, the rolling Sharpe ratios, Alphas and Betas for the portfolios are calculated in order to get the risk-adjusted returns. Last but not least, the non-risk-adjusted returns and the risk-adjusted returns of the value and growth portfolios are compared.

5 PRESENTATION AND DISCUSSION OF RESULTS

First and foremost, the results for the non-risk-adjusted returns are put in priority, followed by the results for the risk-adjusted returns. Subsequently, the results for the boom and bust periods as well as the results for different economic cycles are shown. Moreover, regarding the results for the risk-adjusted returns, the portfolio's Alpha and Beta will be presented. The results for the P/E variable will be illustrated firstly, continued by the results for the P/CF, MTBV and PEG variables.

5.1 Descriptive analysis

Before diving deep into non-risk-adjusted returns and risk-adjusted returns analysis, histograms presenting the distributions of fundamental variables, including P/E, P/CF, MTBV and PEG, of 25 mostly traded stocks on the Helsinki Stock Exchange are shown. The data constructed are the average of P/E ratio, P/CF ratio, MTBV and PEG over the period of five years.

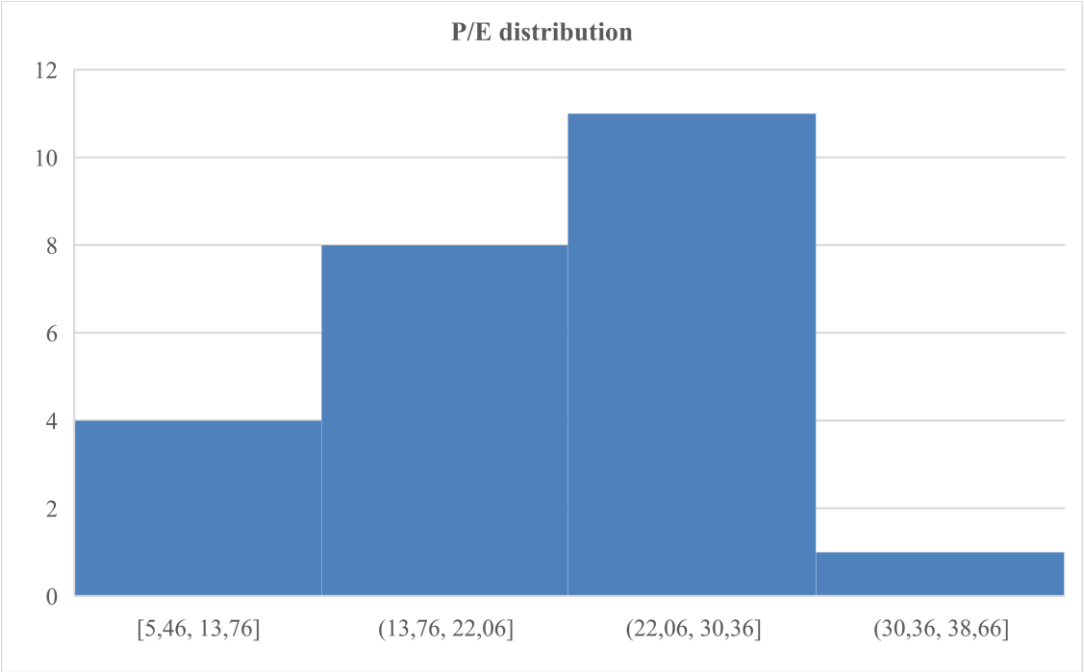

Figure 4: P/E ratio distribution

As illustrated from the figure 4, 25 mostly traded stocks on the OMXH appear to have P/E ratio falling mostly in the range from 22.06 to 30.36, followed by the range from 13.76 to 22.06 and lastly the range from 5.46 to 13.76. There is only one stock with P/E ratio in the range from 30.36 to 38.66.

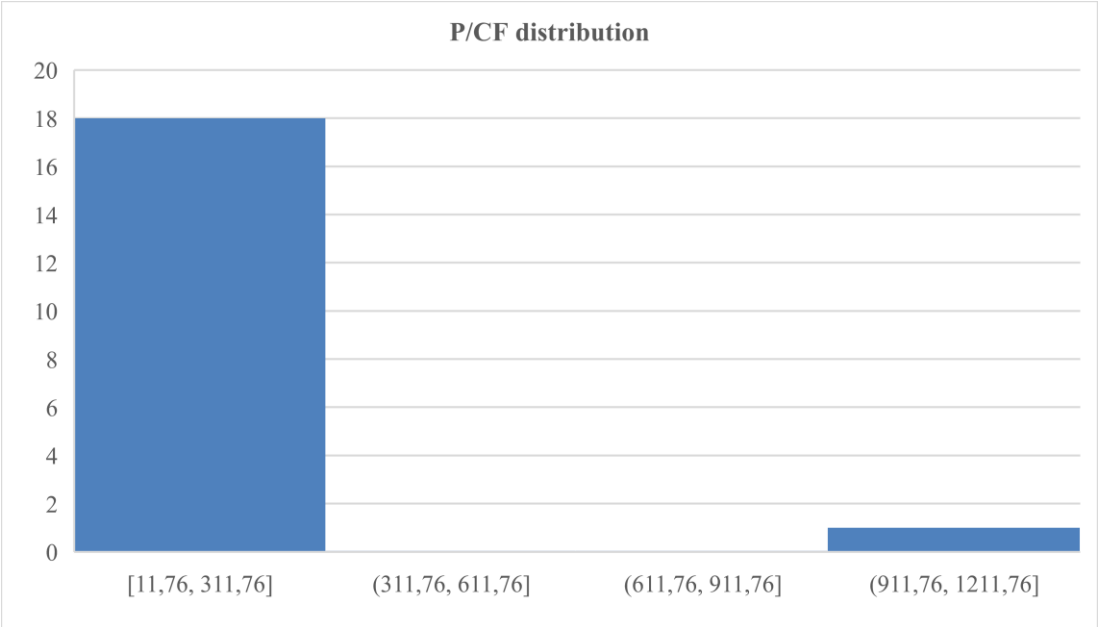

Figure 5: P/CF ratio distribution

For P/CF ratio distribution, most stocks on the OMXH25 has P/CF ratio in the range from 11.76 to 311.76. As presented from figure 5, it seems that potential outliers exist as there are no observations of P/CF for the range from 311.76 to 611.76 and the range from 611.76 to 911.76; however, one stock with outstandingly high P/CF ratio has pulled the distribution of P/CF to the range from 911.76 to 1211.76.

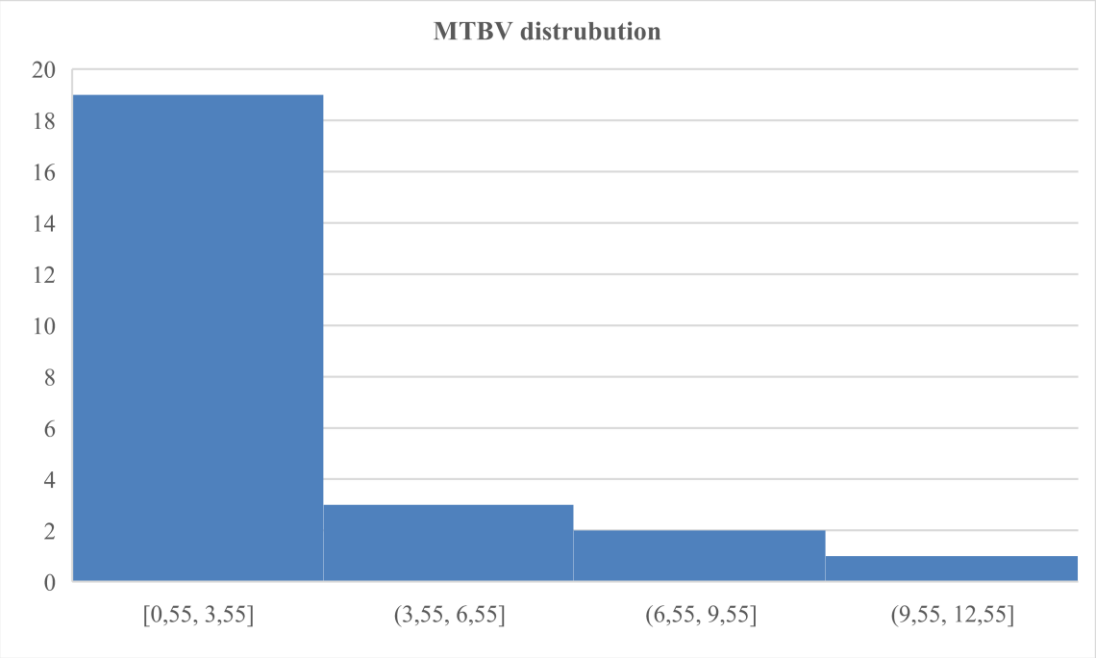

Figure 6: MTBV ratio distribution

In terms of MTBV distribution, the most significant range that 25 stocks belong to is seen from 0.55 to 3.55. There are only six stocks having MTBV falling into the other three ranges consisting of the range from 3.55 to 6.55, the range from 6.55 to 9.55 and the range from 9.55 to 12.55.

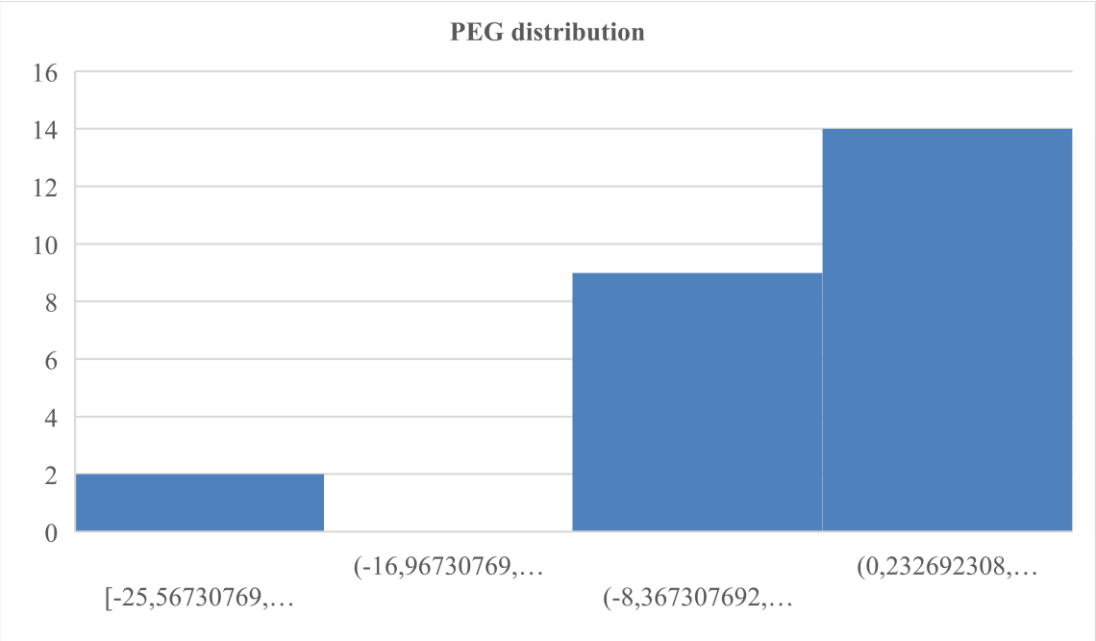

Figure 7: PEG ratio distribution

With regard to PEG distribution, stocks tend to have PEG within the range from -8.37 to 0.23 and the range from 0.23 to 8.83. There are only two stocks having PEG in the range from -25.57 to -16.97, which can be considered as outliers out of the OMXH25.

5.2 Non risk adjusted returns

The results for the non-risk-adjusted returns for value and growth portfolios, ranked according to the P/E.

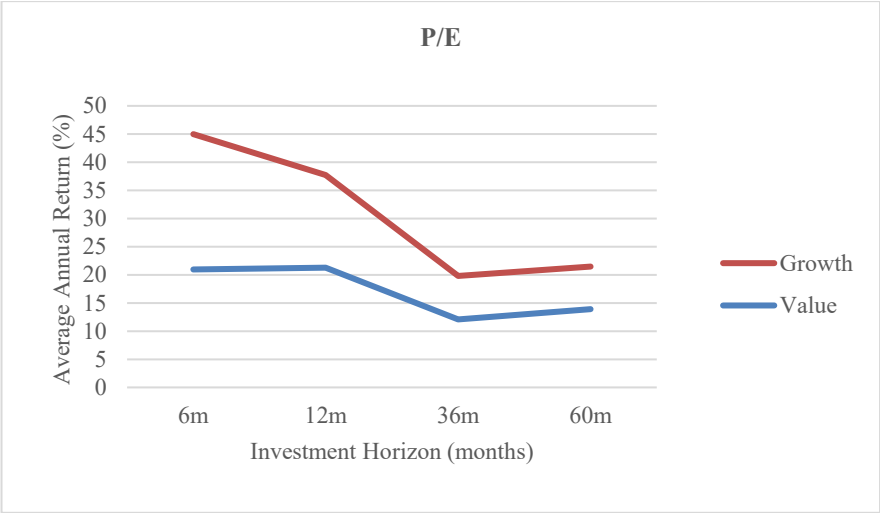

Figure 8: P/E ratio

Table 4: P/E ratio

P/E	Average Annual Returns (%)	
	Value	**Growth**
6m	20.94255	44.9789
12m	21.26804	37.71619
36m	12.07750	19.79783
60m	13.92570	21.44006

In figure 8, the average annual return in percentage is shown with the 6m holding period in the left, continuing to the 12m, 36m and the 60m holding period in the right. The orange line represents the average annual return of the growth portfolio while the blue line shows the average annual return of the value portfolio. Clearly, based on P/E ratio, there is a remarkable difference in the average annual return between the two portfolios and the return of the growth portfolio significantly outperforms the return of the value portfolio in all holding periods. The same result can be seen from the table 4. The table provides a more accurate numbers of the returns. The biggest difference in these two portfolios can be seen during 6m and 12m holding periods when the growth portfolio surpasses the value portfolio by around 20% per year on average. For the rest holding periods such as 36m and 60m, the difference lessens to about 5% per year.

The results for the non-risk-adjusted returns for value and growth portfolios, ranked according to the P/CF.

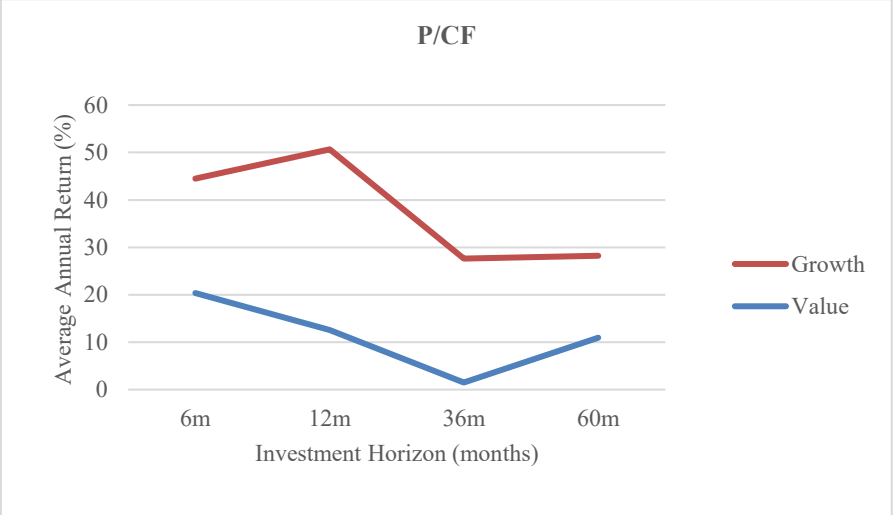

Figure 9: P/CF ratio

Table 5: P/CF ratio

P/CF	Average Annual Returns (%)	
	Value	**Growth**
6m	20.3632	44.51116
12m	12.54398	50.66574
36m	1.499107	27.63343
60m	10.91906	28.24581

Figure 9 and table 5 summarise the non-risk-adjusted returns for value and growth portfolios, ranked according to the P/CF. Again, a significant outperformance in all holding periods is seen in the growth portfolio compared to the value portfolio. Based on P/CF, the difference in the returns performance has increased from 10% as in P/E to approximately 25% per year on average, especially during 6m, 12m and 36m holding periods. For 60m holding period, the difference in return is about 20% per year on average.

The results for the non-risk-adjusted returns for value and growth portfolios, ranked according to the MTBV.

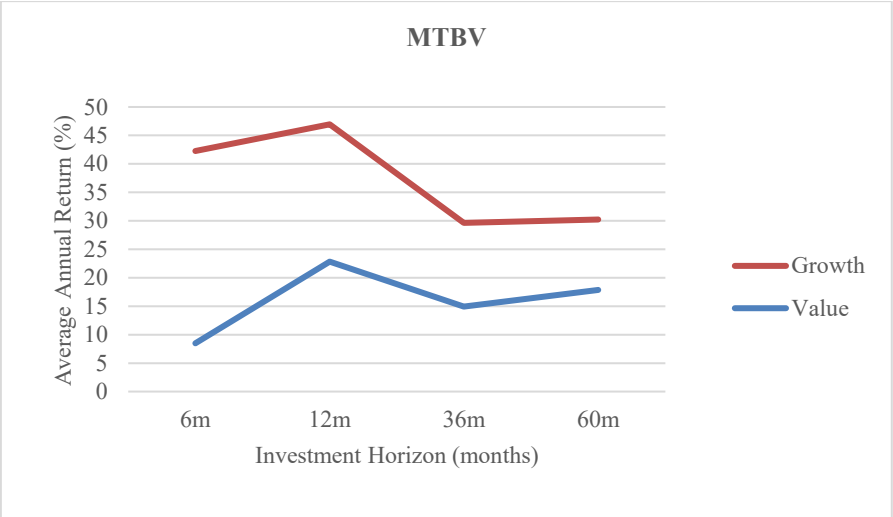

Figure 10: MTBV

Table 6: MTBV

MTBV	Average Annual Returns (%)	
	Value	**Growth**
6m	8.477063	42.24941
12m	22.82638	46.95381
36m	14.90788	29.63551
60m	17.84891	30.24803

Likewise P/CF ratio, no matter which holding period is looked at, the growth portfolio surpasses remarkably the value portfolio in the average annual return. Figure 10 and table 6 summarise clearly the numbers. In this case, according to MTBV, the difference in the returns performance has grown up to around 35% per year on average during short holding periods such as 6m investment horizon and decrease slowly to about 25% per year, 15% per year and 10% per year on average for 12m, 36m and 60m respectively.

The results for the non-risk-adjusted returns for value and growth portfolios, ranked according to the PEG.

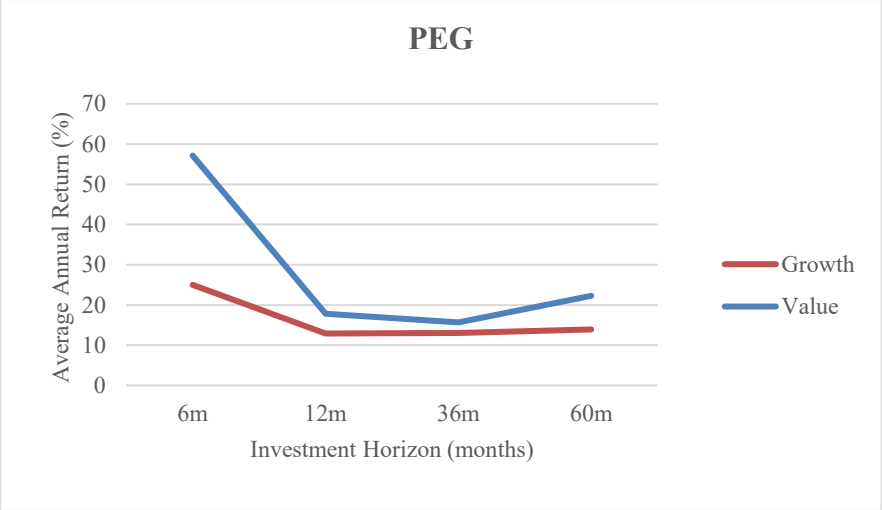

Figure 11: PEG

Table 7: PEG

PEG	Average Annual Returns (%)	
	Value	**Growth**
6m	57.14657	25.00891
12m	16.12917	12.22391
36m	14.07926	13.01313
60m	21.37475	13.87248

A different picture is seen when it comes to PEG ratio. The PEG ratio behaves in an opposite way compared to the P/E, the P/CF and the MTBV ratio. In this case, the value portfolio outperforms the growth portfolio in all investment horizons. The surprising difference in the average annual return between these two portfolios is experienced during the 6m holding period with about 45% return difference per year on average. For the rest holding periods, the difference in the returns performance is not seen outstandingly. Figure 11 and table 7 summarise obviously the numbers. Indeed, the PEG variable does not behave like the other variables. The return of the growth portfolio does not seem to change much during 12m, 36m and 60m investment horizons.

Summary

For P/E, P/CF and MTBV, the growth portfolio outperforms the value portfolio for all investment horizons. The difference in the returns performance between the growth and the value portfolios, in general, drops slightly as the holding period increases. The PEG ratio behaves in an opposite way compared to the P/E, the P/CF and the MTBV ratio with the value portfolio outperforming the growth portfolio in all holding periods.

5.3 Risk adjusted returns

The results for the risk-adjusted returns for value and growth portfolios, ranked according to the P/E.

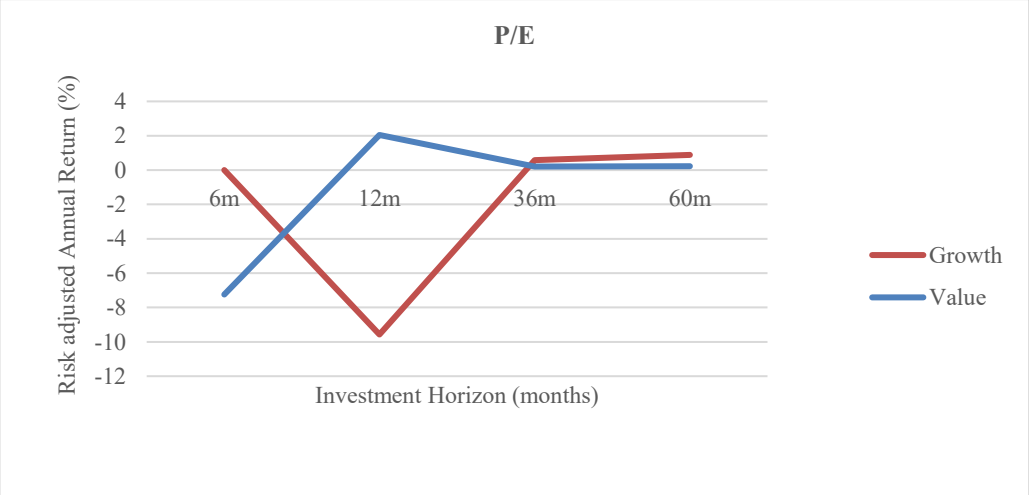

Figure 12: P/E and Beta

Table 8: P/E and Beta

P/E	Annual Risk Adjusted Returns (%)		Beta Mkt rp		Beta SMB		Beta HML	
	Value	**Growth**	**Value**	**Growth**	**Value**	**Growth**	**Value**	**Growth**
6m	-7.243047	0.000173	4.69	1.36	-6.78	-1.89	-0.54	-0.71
12m	2.044436	-9.571402	-0.40	6.38	0.45	1.91	-0.32	-3.26
36m	0.212190	0.573977	0.77	0.64	0.53	-0.21	-0.01	-0.12
60m	0.233378	0.884078	0.90	0.70	0.19	-0.29	0.00	0.04

According to figure 12 and table 8, when the returns are risk-adjusted, the growth portfolio still surpasses the value portfolio in all holding periods but 12m. That is to say, the P/E variable continues to be a good indicator for the superior returns. The most notable differences in the returns performance are during 6m investment horizon and 12m investment horizon with the 6m, the growth portfolio outperforming the value portfolio by about 7% per year on average and with the 12m, the value portfolio outperforming the growth portfolio by about 12% per year on average. The reason for the value portfolio outperforming the growth portfolio during the 12m investment horizon is because of the significantly low beta that the value portfolio experiences. The differences in the returns performance during the 36m and 60m investment horizon are negligible.

The results for the risk-adjusted returns for value and growth portfolios, ranked according to the P/CF.

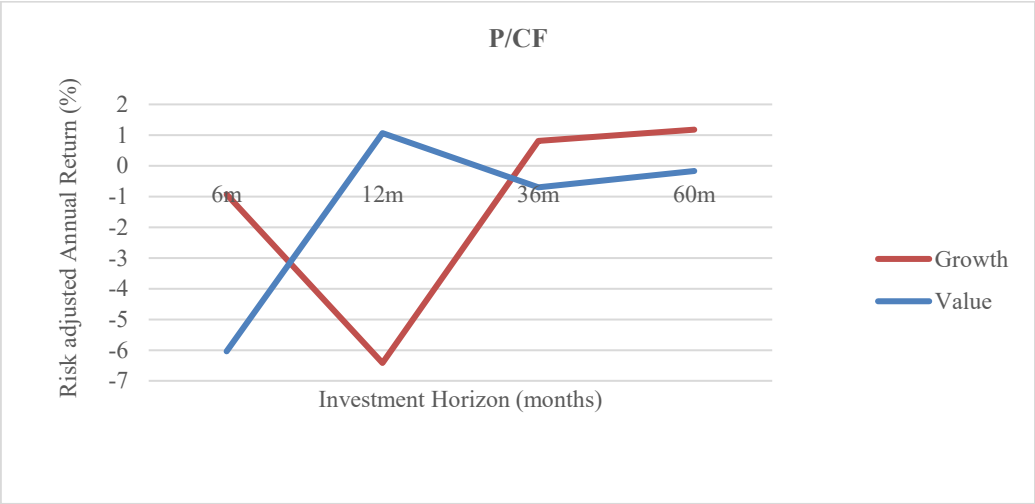

Figure 13: P/CF and Beta

Table 9: P/CF and Beta

P/CF	Annual Risk Adjusted Returns (%)		Beta Mkt rp		Beta SMB		Beta HML	
	Value	**Growth**	**Value**	**Growth**	**Value**	**Growth**	**Value**	**Growth**
6m	-6.039991	-0.933594	3.53	0.76	2.74	0.79	-1.70	-1.61
12m	1.065101	-6.418896	-0.09	5.21	0.57	1.54	-0.20	-2.44
36m	-0.697404	0.814196	0.96	0.92	0.58	0.06	0.10	-0.23

60m	-0.167673	1.178516	1.17	0.93	0.49	-0.08	0.04	0.09

Figure 13 and table 9 show the similar pattern with the P/E case when it comes to the results of the risk-adjusted returns for the value and the growth portfolios ranked according to the P/CF. Again, when the returns are risk-adjusted, the growth portfolio still surpasses the value portfolio in all holding periods but 12m and the P/CF variable continues to be a good indicator for the superior returns. During the 6m investment horizon, the growth portfolio outperforms the value portfolio by about 5% per year on average. The reason behind is due to the considerably low beta of the growth portfolio and the extremely high beta of the value portfolio. In this case, the beta of the growth portfolio is lower than the market's beta of 1 yet this portfolio of growth stocks has a negative risk-adjusted return. For the 12m holding period, the opposite is seen with the value portfolio outperforming the growth portfolio by around 7% per year on average. For the 36m and 60m holding period, the difference in the returns performance is approximately 1% per year on average.

The results for the risk-adjusted returns for value and growth portfolios, ranked according to the MTBV.

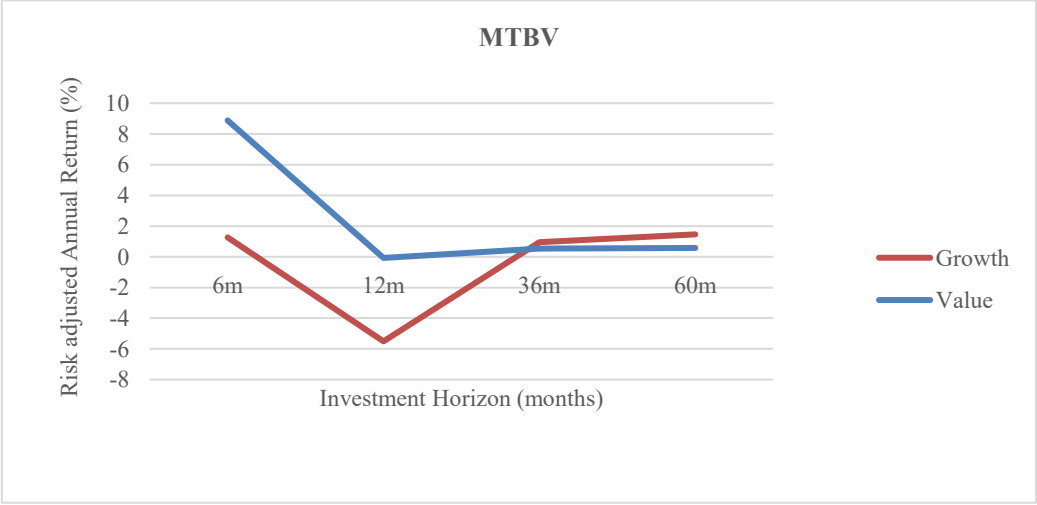

Figure 14: MTBV and Beta

Table 10: MTBV and Beta

MTBV	Annual Risk Adjusted Returns (%)		Beta Mkt rp		Beta SMB		Beta HML	
	Value	**Growth**	**Value**	**Growth**	**Value**	**Growth**	**Value**	**Growth**
6m	8.880648	1.267688	-5.82	-0.67	-3.21	0.09	0.52	-1.32
12m	-0.074350	-5.507848	0.53	4.45	0.36	1.50	-1.23	-2.53
36m	0.536351	0.948239	0.62	0.74	0.30	-0.12	0.04	-0.38
60m	0.581824	1.458294	0.89	0.70	0.54	-0.22	0.00	-0.02

Figure 14 and table 10 illustrate notable outperformance in the returns performance of the value portfolio over the growth portfolio during 6m and 12m investment horizon with the former experiencing about 8% difference per year on average and the latter witnessing around 6% difference per year on average. The reason for the better performance of the value portfolio is owing to the remarkable lower beta that the value portfolio possesses in these two investment horizons. Moreover, as the investment horizon increases, the differences in the returns performance become less significant and the growth portfolio takes back the lead. During 36m and 60m investment horizon, the growth portfolio surpasses the value portfolio with marginal differences.

The results for the risk-adjusted returns for value and growth portfolios, ranked according to the PEG.

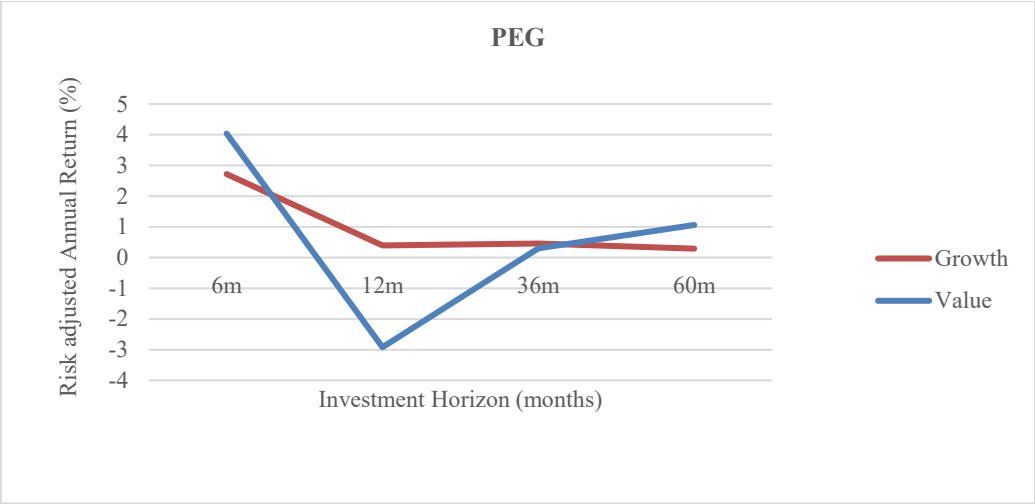

Figure 15: PEG and Beta

Table 11: PEG and Beta

PEG	Annual Risk Adjusted Returns (%)		Beta Mkt rp		Beta SMB		Beta HML	
	Value	**Growth**	**Value**	**Growth**	**Value**	**Growth**	**Value**	**Growth**
6m	4.037169	2.717397	-1.03	-0.79	-1.39	-0.88	-0.83	-0.01
12m	-2.920274	0.395188	1.61	0.11	1.24	0.54	-2.38	-0.60
36m	0.297305	0.456542	0.40	0.49	0.05	0.28	-0.35	-0.03
60m	1.058568	0.289072	0.54	0.72	0.45	0.05	-0.21	-0.23

Last but not least, the results for the risk-adjusted returns for the value and the growth portfolios ranked according to the PEG are found. Figure 15 and table 11 clearly present the trends and the numbers. Regardless of risk-adjusted or non-risk-adjusted, PEG variable seems to experience a different development of the returns. For the 6m holding period, the value portfolio outperforms the growth portfolio by approximately 1% per year on average. For the 12m holding period, the opposite scenario is seen with the growth portfolio outperforms the value portfolio by around 3% per year on average. The better performance is always explained by the lower beta the value portfolio has for 6m and the lower beta the growth portfolio has for 12m. A remarkable point is during the 36m investment horizon, the difference in the returns performance is much smaller and so is the difference in the betas. For the 60m holding period, the value portfolio outperforms by less than 1% per year on average.

Summary

In most cases, the growth portfolio outperforms the value portfolio. To be concrete, with P/E and P/CF variables, the growth portfolio outperforms the value portfolio during 6m, 36m and 60m investment horizons. The difference in the returns performance are significant with shorter investment horizons and gradually lessens with longer investment horizons. For the 12m, with both P/E and P/CF variables, the value portfolio surpasses the growth portfolio. The reason for the better performance in all cases is due to the lower betas that the portfolios possess, regardless of the growth or the value portfolio.

MTBV and PEG variables show different pictures in the returns performance. MTBV illustrates the value portfolio outperforming the growth portfolio in the shorter investment horizons and having marginal difference in the longer investment horizons. PEG illustrates the value portfolio outperforming the growth portfolio during the edges investment horizons of 6m and 60m while the opposite is seen during the middles investment horizons of 12m and 36m. Again, the reason for the better performance in all cases is due to the lower betas that the portfolios possess, regardless of the growth or the value portfolio.

5.4 Boom and bust periods

In this section, the results for the annual risk-adjusted returns, which is now presented in the form of Alphas (in percentage), for value and growth portfolios during boom and bust periods will be explained.

The boom and bust periods are presented again in table 2 below:

Table 2: Boom and bust periods

	Period 1	**Period 2**
Bust Periods	**Q1 2015 - Q4 2015**	**Q1 2017 - Q4 2018**
Boom Periods	**Q1 2016 - Q4 2016**	**Q1 2019 - Q4 2019**

The Alphas, or annual risk-adjusted returns, for value and growth portfolios during boom and bust in period 1 are presented in table 12 below:

Table 12: Alphas for boom and bust during period 1

Period 1	Value stocks		Growth stocks	
	Bust	**Boom**	**Bust**	**Boom**
P/E	0.17%	1.38%	3.56%	2.01%
P/CF	0.29%	2.98%	4.01%	1.18%
MTBV	-0.73%	2.51%	3.66%	2.59%
PEG	1.26%	1.26%	1.01%	1.01%

Table 12 above has clearly shown that in bust period, the growth portfolio outperforms the value portfolio for variables including P/E, P/CF and MTBV; however, the opposites in seen for PEG variable. The difference in the returns performance stands at approximately 3% per year on average. In boom period, the growth portfolio surpasses the value portfolio for P/E and MTBV while the reverse picture is shown for P/CF and PEG. The difference in the returns performance is now about 1% per year on average.

More interestingly, with the growth portfolio, the returns are higher in bust period than in boom period for variables such as P/E, P/CF and MTBV, except for PEG whereas with the value portfolio, the returns are higher in boom period than in bust period for all variables such as P/E, P/CF and MTBV, except for PEG.

The Alphas, or annual risk-adjusted returns, for value and growth portfolios during boom and bust in period 2 are presented in table 13 below:

Table 13: Alphas for boom and bust during period 2

	Value stocks		Growth stocks	
Period 1				
	Bust	**Boom**	**Bust**	**Boom**
P/E	-0.42%	0.98%	0.72%	0.29%
P/CF	-1.40%	-0.28%	0.50%	0.41%
MTBV	0.03%	1.26%	0.62%	1.01%
PEG	0.16%	0.93%	-0.40%	1.75%

Table 13 above, witnessing the annual risk-adjusted returns for value and growth portfolios during boom and bust in period 2, has shown a similar pattern as in table 12 for period 1. Once again, in bust period, the growth portfolio outperforms the value portfolio for variables including P/E, P/CF and MTBV; however, the opposites in seen for PEG variable. The difference in the returns performance between the two portfolios is around 1% per year on average. In boom period, this time, the value portfolio surpasses the growth portfolio for P/E and MTBV while the reverse picture is shown for P/CF and PEG. The difference in the returns performance is about 1% per year on average.

More significantly, with the growth portfolio, the returns are, one more time, higher in bust period than in boom period for variables such as P/E and P/CF, except for MTBV and PEG whereas with the value portfolio, the returns are always higher in boom period than in bust period for all variables such as P/E, P/CF, MTBV and PEG.

5.5 Economic cycles

In this section, the results for the annual risk-adjusted returns, which is now presented in the form of Alphas (in percentage), for value and growth portfolios during different economic cycles will be explained.

The two economic cycles are presented again in table 3 below:

Table 3 Economic cycles

	Cycle 1	**Cycle 2**
Economic cycles	**Q1 2015 - Q4 2016**	**Q1 2017 - Q4 2019**

The Alphas, or annual risk-adjusted returns, for value and growth portfolios during the two economic cycles are presented in table 14 below:

Table 14: Alphas for two economic cycles

	Value stocks		Growth stocks	
	Cycle 1	**Cycle 2**	**Cycle 1**	**Cycle 2**
P/E	0.52%	0.21%	1.33%	0.52%
P/CF	1.02%	-0.70%	1.41%	0.75%
MTBV	0.80%	0.51%	1.77%	0.89%
PEG	1.84%	0.30%	0.75%	0.44%

Table 14 provides an obvious explanation of the annual risk-adjusted returns for value and growth portfolios during the two economic cycles. It can be clearly seen that the growth portfolio has higher returns than the value portfolio for variables including P/E, P/CF and MTBV in both economic cycle 1 and cycle 2. The PEG variable always shows a different development in the returns as in the economic cycle 2, the growth portfolio surpasses the value portfolio in the annual returns while in the economic cycle 1, the opposite is seen with the value portfolio outperforming the growth portfolio.

The significant point is that regardless of the growth or the value portfolio, the returns are always higher in economic cycle 1 than in economic cycle 2 for all variables P/E, P/CF, MTBV and PEG.

5.6 Overview of the summarised portfolio results

In general, the growth portfolio outperforms the value portfolio for almost all holding periods and for almost all variables, except for PEG variable where the opposite occurs. Moreover, when the holding periods get larger such as during 36 months and 60 months, the differences in the returns become smaller. This is true for both non-risk-adjusted returns as well as risk-adjusted returns. The strong point is that in risk-adjusted returns, during 12 months investment horizon, the value portfolio surpasses the growth portfolio with the significant difference in returns. In addition, the reason for the better performance in all cases is due to the lower betas that the portfolios possess, regardless of the growth or the value portfolio.

In regards to boom and bust periods as well as two economic cycles, once again, the growth portfolio outperforms the value portfolio in most of the cases and for most of the variables, except for PEG variable where the different happens. The outstanding part is that in the boom and bust period 2, the value portfolio surpasses the growth portfolio when it comes to variables including P/E and MTBV; however, the difference in returns is small.

5.7 Comments to the results and comparison with the previous studies

It is well knowledge that during 6 months investment horizon, the growth portfolio outperforms the value portfolio for variables such as P/E, P/CF, MTBV but PEG and for all kinds of returns such as non-risk-adjusted returns and risk-adjusted returns. Needless to say, the strategy in this case is likely to buy growth stocks and sell value stocks when it comes to P/E, P/CF, MTBV or buy value stocks and sell growth stocks when it comes to PEG. By virtue of this practice, investors are likely to gain the difference in returns while having lower risk (the reason has already been discussed above as the better performance in all cases is due to the lower betas that the portfolios possess, regardless of the growth or the value portfolio). This implementation can also be used for other holding periods with the notice for investors to buy the portfolio that is forecasted to gain in returns and to sell the portfolio that is anticipated to lose in returns.

The results of this study are not completely consistent with the previous studies conducted on the same topic. This can be partially explained by the difference in time horizon. While the old classic studies are in favour of the contrarian investment strategy in value stocks, the author's updated empirical results suggest to go for the confronting investment strategy in growth stocks.

This study's empirical results contradict the previous study conducted by Tomi (2011) in terms of the fact that according to Tomi (2011), on the Helsinki stock exchange, concerning MTBV, the value portfolio surpasses the growth portfolio during 6 months investment horizon. The two studies are similar with regards to the fact that the value portfolio consisting of five stocks provides the biggest average annual return with the holding period of 6m, repeated for ten years. Fama and French (1998), on the international markets, have also indicated that there is a value premium in average annual returns. Moreover, value stocks with low P/E, P/CF and MTBV yield higher average annual returns than growth stocks with high P/E, P/CF and MTBV.

The second similarity between this study and the study from Tomi (2011) is that the portfolios held from three to nine months (shorter periods) provide more returns than the portfolios held for longer periods, which proves to be unlikely with the previous study from Lakonishok (1994), on the United States market, suggesting that longer holding periods mean larger revenues. Tomi (2011) has also supported the author's research and proved that the superior returns cannot be explained by the riskiness of the portfolios since according to Tomi (2011), the riskiness of the well-performed portfolios does not seem to be any higher than the riskiness of the OMXH Index.

As of risk-adjusted returns, this study's empirical results do not go hand in hand with the previous studies conducted Lakonishok (1994) or Basu (1977), on the United States market, who documents that the value stocks with low P/E earn higher risk-adjusted returns than the growth stocks with high P/E, on average. Furthermore, according to Vertti (2020), on the United States market, the value portfolios (with low MTBV, P/E and P/CF) have performed significantly better than the market portfolio on a risk-adjusted basis with 6m holding period, repeated over fifty years.

In conclusion, from all presented evidence, it cannot be denied that the past cannot predict the future and it would be risky for investors to impose the past's results on the future's when trying to beat the market. Moreover, it is well known that, nowadays, investors are prone to investing in growth stocks and clearly, investing in growth stocks is a form of momentum investing.

6 CONCLUSION

The conclusion section serves to answer the research questions raised in the beginning of the study based on theories and empirical findings. The sub-questions and the main questions are presented one more time as follows:

Sub-questions supporting the main research questions are stated as below:

- **What does well-rooted financial theories say about the value investing strategies?**

  The excess returns found on the Finnish stock market can only be partly explained by the well-rooted financial theories. It cannot be denied that under Efficient Market Hypothesis (EMH), more importantly, under the strong assumption of the EMH, excess return has no place to exist; however, that fact is that the market does not always in its strong form and be totally efficient. Needless to say, in order to be in its strong form, all available information should be reflected in the price already but it costs time and money for investors to be updated. Therefore, stock prices cannot always reflect the new information, the market cannot always be efficient and excess return can exist. An interesting point is that even if the market was in its efficient form, value premium is still likely to appear as growth stocks starting to erode while value stocks beginning to turn around their company's performance and gain growths as the result of the increased competition in the market. Under this suggestion, the EMH does not contradict the existence of vale premium. More significantly, the outperformance of value stocks is proven by empirical results based on PEG variable.

  When it comes to CAPM, the theory tries to explain the excess returns gained based on the high betas that the stocks, especially value stocks have compared to the other stocks (such as growth stocks). Nevertheless, as found from the empirical research, regardless of the growth or the value portfolio, the excess returns in all cases is owing to the lower betas that the portfolios possess.

  All in all, the standard financial theories such as EMH and CAPM seem to have hard time explaining the existence of the premium on the Finnish stock market.

Hence, for a more comprehensive explanations, behavioural finance should be put into consideration. This will be discussed in the next sub-question.

- **If empirical results suggest there have been abnormal returns, does it mean the market is inefficient? What are the possible causes and phenomena to explain the market abnormality?**

  In most cases, the empirical results suggest there have been abnormal returns when executing strategies of investing in growth stocks. Obviously, irrational behaviour of investors including extrapolation and agency problems is reasonable to explain the existence of these returns. On one hand, with regard to extrapolation, investors have the tendency to incline future growth based on previous growth performance and they like to extrapolate that trend. As has been empirically proven in this study, the growth stocks outperform the value stocks in the first boom period (but P/CF and PEG variables) and in both bust periods (but PEG variable) and the premium exists in both boom and bust periods. On the other hand, when it comes to agency problems, institutional investors may be short-sighted and want quick returns, which is the reason why they do heavy investment in the growth stocks to satisfied the return requirements from their supervisors or clients. This bias over the growth stocks is potential to drive their prices up more higher while decrease the prices of the value stocks.

  Another explanation for the persistence of the abnormal returns is the overconfidence of investors. Overconfident investors are those who overbearingly believe in the increasing momentum in the stock price. Nowadays, it is well knowledge that investors are prone to momentum investing strategy and clearly, investing in growth stocks is a form of momentum investing.

- **Which variables among these four variables, Price-to-Earnings, Price-to-Cash-flow, Market-to-Book and Price-Earnings-Growth, should be used as the indicator for possible higher excess return adjusted for risk?**

  The empirical results suggest that all variables can be used to indicate higher excess return adjusted for risk. The most important point to bear in mind is that which portfolio: growth or value portfolio is picked and which investment horizon: 6 months, 12 months, 36 months or 60 months is dealing with.

  Based on P/E and P/CF ratio, the growth portfolio is likely to yield a higher risk-adjusted return compared to the value portfolio for all investment horizons, except for the 12 months horizon. When MTBV is used, the value portfolio surpasses the growth portfolio in shorter investment horizons and starts to revert in the result with longer investment horizons. For PEG ratio, the value strategy is the superior one compared to the growth strategy during 6 months and 60 months while the opposite is seen during 12 months and 36 months.

  When looking at boom and bust periods, the variables are used case by case to recommend different ways of performance during different market situations of the two strategies. On average, when the growth strategy is followed, the returns are of high likelihood to be greater compared to the value strategy when the market increases and also when the market declines.

  In conclusion, all fundamental variables can be used as indicators for possible higher excess return adjusted for risk, especially during the short holding periods.

- **Which investment horizon is preferable? How long does it take for the market to revert back to its long-term mean?**

  Looking at the empirical results, it cannot be denied that 6 months investment horizon is the most favourable horizon for the growth stocks to yield the biggest difference in risk-adjusted returns. This is true when portfolios are based on P/E and P/CF ratio. With portfolios based on MTBV, the biggest difference in risk-adjusted returns is also seen during short investment horizon

of 6 months; however, this time, the situation is in favour of value stocks instead of growth stocks. During 12 months investment horizon, a more significant difference in risk-adjusted returns is experienced for value stocks for P/E and P/CF ratio. Based on the evidence above, there is an indication that the Finnish stock market's mean reverts quite quickly and therefore, a short investment horizon of around 6 months is preferable if the growth portfolio is followed and the investment horizon of around 12 months is preferable if the value portfolio is followed. PEG ratio always tend to present a different picture of all.

As investment horizons increase to 36 months and 60 months, the differences in risk-adjusted returns get smaller and the market seems to revert back to its equilibrium or efficient state.

Taking transaction costs under consideration, it cannot be denied that the costs are higher as the holding periods are shorter. However, it is also the fact that the transaction costs are so low in general; thus, it is reasonable to agree that the shorter holding periods still yield greater returns.

Main research question:

- **Can a contrarian investment strategy in value stocks provide a higher excess return adjusted for risk compared to a conforming investment strategy in growth stocks on the Finnish stock market?**

Through the discussion and empirical results presented above, it can be clearly seen that a contrarian investment strategy in value stocks is not likely to yield a higher risk-adjusted return than a confronting investment strategy in growth stocks on the Finnish market in most cases. That is to say, the results are not completely consistent with the previous studies conducted on this topic. More importantly, the volatility is always lower when the certain portfolio is outperforming the other portfolio.

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